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ABSTRACT

Intended for college instructors, this paper describes a course that explores the ways in which technology shapes American life by focusing on the ethical questions that technology raises. The introductory section of the paper includes a description of the course and its objectives. The next two sections contain the assignment sequence and study questions for a sample unit on Robert Pirsig's "Zen and the Art of Motorcycle Maintenance." Section 4 suggests some curricular combinations for thematic, topical, and experimental courses on the same theme. In the fifth section, seed games for freewriting and discussion are presented. The final section provides an extensive annotated bibliography on the theme of technology and culture. (JL)

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ETHICS, LITERATURE, TECHNOLOGY:

A Writing Intensive, Cross-Disciplinary Course

I. Course Description & Objectives
II. A Sample Unit
III. Sample Study Questions
IV. Some Curricular Combinations
V. Seedgames for Freewriting & Discussion
VI. Bibliography: Technology and Culture

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I.

A. COURSE DESCRIPTION

This course explores ways in which technology -- as idea and as applied technique -- shapes American life. It focuses on ethical questions technology raises, providing an introduction to the concept of ethics and to basic features of ethical decision-making. It emphasizes applications of ethical principles to problems facing Americans living and working in technological environments. It attempts to trace the roots of technology in Western history and philosophy and, in turn, to pursue the ramifications of its growing presence in our lives. Literary works tap a variety of personal responses to technological problems.

Pedagogically, the course is integrative, combining lecture, discussion, field trips, guest speakers, and on-going writing. Through keeping a journal, doing peer feedback, editing, drafting, and revising, students engage writing as a process central to class experience. They write toward synthesis of such disciplines as literature, philosophy, history, natural and social sciences, and technology. Finally, through disciplined observing, listening, sharing, and writing, the student articulates a <u>personal ethic</u> of technology.

B. OBJECTIVES

1. To understand major cultural and historical determinants of technology (the idea of progress; the rise of quantitative-mathematical certainty; the idea of knowledge as power; American pragmatism; the shattering of the medieval model, etc.)
2. To see ethics not only as a set of variable concepts but as an attitude joining personal, social, and cultural arenas in thought and act -- the idea of ethics and the <u>experience</u> of the ethical.
3. To understand ethical problems raised by Western, especially American, technological development -- to encounter healthy and unhealthy dimensions of technique and the technical in areas such as automation in industry; computation, computers, artificial intelligence; demands on finite energy and ecosystems; the attack on quality; futurist technologies, etc.
4. To gain field experience through first-hand observation of: (e.g. the factory production process; technological agriculture; a data processing center; the urban environment; an electronics plant; a genetics laboratory, etc.)
5. To use written responses as the primary means of assimilating course materials. These might include a journal, short reaction papers, a longer paper. Students can work toward formulating their own ethical principles in a personal synthesis of the course.

II. SAMPLE UNIT

Here is an assignment sequence for the first week of a two week unit (in English, Humanities, Philosophy, or...?) on R. Pirsig's <u>Zen and the Art of Motorcycle Maintenance</u> (NY: Bantam, 1974). Each writing task is *asterisked.

Day		Activity	Time
M	1.	*Freewriting journal: what does technology mean to you?	15 minutes
	2.	Instructor-guided discussion: elicit class sharing. Work toward a list of consensus items for a definition of "technology" (use blackboard).	15 minutes
	3.	Introduce Pirsig's book as a story: a father and son's mutual journeys toward themselves and each other as they travel through the mindscape of reason and technology.	15 minutes
	4.	*Assign part one of the book for homework; hand out study questions for journal writing (see attachment III). Explain that the week's activities include a written essay.	
T (Instructor moves from group to group as facilitator; answers questions; listens, taking stock of potential problems and things to exploit later)	1.	Break the class into groups relative to the question chosen for journal writing. Encourage sharing of journal excerpts. Have each group (of 3-4) just listen, not criticize; have them react to anything they find of interest.	25 minutes
	2.	*Focussed freewriting on one of the ideas from the student's journal.	10 minutes
	3.	Trade writing with your neighbor; read; give feedback that will help the writer proceed toward an essay (e.g. "This sentence says it all"; "that's a good illustration"; "I couldn't follow you here," etc.)	10 minutes
	4.	Homework: finish part two of the book (halfway).	
W	1.	*Instructor-directed discussion: classic vs. romantic thinking and behavior. Two views of motorcycle maintenance. Which kind of thinker are you? In your journal list some familiar American figures on either side of this dichotomy (B.F. Skinner, Rip Van Winkle, 6 Million Dollar Man, R2D2, Emerson, Bjorn Borg, E.T.)	25 minutes
	2.	*Working from your focussed freewriting, write a single sentence statement that tells where your essay will go. Get feedback from the instructor or someone in your discussion group, or both.	20 minutes
	3.	Homework: drawing from your journal, your freewriting, and feedback, write a draft at least 3 paragraphs long.	

Day	Activity	Time
TH (Instructor evaluates journals; facilitates peer editing when necessary)	1. *Peer-editing groups of 3-4. The author reads aloud; the group gives written feedback (A. What's good about it? B. How can the writer improve it?)	45 minutes
	2. Each student should leave with two or three feedback sheets.	
	3. Homework: Pirsig part three (reading and note-taking.	
F	1. *Focusing exercise: Write three sentences -- a. Describe Pirsig's attitude toward machine maintenance. b. Why is he uneasy about technology? c. What new kind of thinking is he exploring?	10 minutes
	2. Trade, share, revise.	10 minutes
	3. Instructor should collect these, evaluating them as an indicator of comprehension and as a test for sentence savvy.	
	4. Discussion -- toward possible consensus.	15 minutes
	5. Introduce part four of Pirsig.	10 minutes
	6. *Homework: using feedback, revise your draft into a polished version.	

Activities for Week Two

-- vary the format of week one, but include activities that integrate writing, reading, sharing, feedback, and revision. Collect and evaluate student essays.

-- Arrange individual or group conferences for instructor-student feedback on polished essays.

-- Alternative strategies:

1. Reading quizzes for comprehension, discussion, writing.
2. Field trip: visit a computer programming center; a motorcycle shop; a factory -- record impressions in your journal.
3. Guest speaker: a professional familiar with some aspect of high technology (a programmer); a factory worker; a doctor; an engineer.
4. An appropriate film.
5. Spleen session -- let students talk about what's difficult or what they don't like about the book.
6. Quick writing exercises to generate discussion (see section V).

III. ETHICS, LITERATURE, AND TECHNOLOGY: STUDY QUESTIONS FOR PIRSIG

Remember: Journalize as you read in order to start ideas percolating. Here are a few questions to get you started. Write a few questions of your own as well.

1. Is there anything unusual about the narrator's attitude toward his motorcycle? Do you relate to machines this way? Differently? Explain.
2. Can you identify with John and Sylvia? Is the narrator correct in his diagnosis of their attitude toward technology? What is he driving at?
3. Are you a "classic" thinker or a "romantic" thinker in Pirsig's terms? Explain with some specific illustrations from your own experience.
4. Why was Phaedrus interested in philosophy, specifically, in Hume and Kant? (See pp. 117-130).
5. State in your own words Phaedrus's attitude toward science. What made him uneasy about it? What new direction was he exploring?
6. Do you agree with Phaedrus's position on the nature of quality? Is it useful? Does it spill over into ethics?
7.
8.
9.

IV. SOME CURRICULAR COMBINATIONS

(Use imagination and past experience in designing units. Try for a cross-disciplinary mix of theory, imaginative creativity, and practical applications). Texts are annotated in the accompanying bibliography (section VI).

A. Thematic Courses

-- Man as Machine (Shelley's Frankenstein, Chaplin film, "The Modern Age," Clarke's Space Odyssey (book and film), Dickens's Hard Times.)

-- Beyond Reason: The Individual and the System (build a unit or course around Thoreau's Walden and Skinner's Walden II. How would Thoreau evaluate Skinner and vice-versa?). Interview a hermit; a mental patient.

B. Topical Courses

-- Technology, Fantasy, and Behaviorism (C.S. Lewis's space trilogy and Abolition of Man along with Skinner's Beyond Freedom and Dignity).

-- Mind and Myth: the Computer and Artificial Intelligence (Kidder's novel, The Soul of a New Machine, Evans, Micro Millenium, and Roszak's Where the Wasteland Ends. Take the class to a data processing center; have a computer-literate student contribute via computer task).

-- Technology, Ecology, and Meditation: (combine an ecological field trip with study of Abbey's Desert Solitaire and Thomas's Lives of a Cell. Require a journal in which students attempt to bring together clinical-technical observations with philosophical speculation).

-- Evolution: Beyond Darwinism. Use the Norton Critical Edition of Darwin as a major text; then explore the crucial areas Darwin overlooked (culture and consciousness). Compare Goethe's organic evolution from original archetypal wholes. Look into non-Darwinian biology (via Roszak or Macbeth). Can the study of language cast any light on biology? Should physics be based on biology rather than vice-versa? etc. Look at slime-molds, the butterfly, the evolution of a word (e.g. thing, reason, daisy, science, etc.)

C. Experimental

-- Technology from the Ground Up (through brainstorming, note-taking, journal keeping, and eventually experimenting and hypothesizing, have the class invent the basic principles of a new science and then devise some ways to test the principles (e.g. -- (1) describe life on another planet; (2) the principles of a new language; (3) a new form of matter; (4) an oriental approach to energy; (5) a blueprint for an ecologically sane community; (6) a program for coping with effects of high-stress technology; etc., etc.)

V. SEED-GAMES FOR FREEWRITING AND DISCUSSION

Down to Earth, Water and Air: Bringing Technology Back Home

1. Discuss effects on a river of (a) a bridge; (b) a hydro-electric plant.
2. Do the same relative to air for the hydro-electric plant and a windmill.
3. What is the difference between science and technology? Use the following add to illustrate:

   Nature creates ore deposits. Anaconda creates mines.

4. Key words in the history of science:

   aition = that which is instrumental, that which produces or fabricates;
   ↓
   causa = Aristotle's efficient cause;
   ↓
   cause = force creating an observable effect.

   Write a story in which all causes are aitions.

5. Compare the relationships to water of (a) a sailboat; (b) a motorboat; (c) a canoe.
6.

VI. SELECTED AND ANNOTATED BIBLIOGRAPHY: TECHNOLOGY AND CULTURE

Description: These items are primarily for instructor preparation (education and planning). A few of them can be used in high-school or college curricula. Some examples of possible units appear in section IV.

Abbey, Edward, Desert Solitaire (New York: Ballantine, 1968). A meditative and satiric look at the Utah desert from someone who has lived and breathed it. Bitter critique of governmental and industrial exploitation.

Appleman, P., ed., Darwin: A Norton Critical Edition, 2nd ed. (New York: Norton, 1979). Contains extensive selections from Descent of Man and Origin of the Species plus modern commentaries vis à vis science, society, philosophy, theology.

Barfield, Owen, Saving the Appearances (New York: Harcourt, 1957). Careful analysis of the psycho-social aspects of perception, expecially perception operative in scientific knowledge. Wide historical range; touches provocatively on theological implications of the evolution of consciousness.

Barrett, William, The Illusion of Technique (New York: Doubleday, 1979). Analysis of the cultural, especially philosophical, determinants of science and modern technology. Extensive treatment of Wittgenstein, Heidegger, and William James. Non-technical.

Behrens, L. & L. Rosen, Writing and Reading Across the Curriculum (Boston: Little-Brown, 1982). Cross-disciplinary reader, including sections on the presidency, morality and the movies, the great depression, fairy tales, obedience to authority, the computer, death and dying, woman's role, politics and language, nuclear war, and personality.

Berry, Wendell, The Unsettling of America (New York: Avon, 1977). Penetrating essay on the interplay of culture and agriculture in modern America. Defends traditional ties to the land; attacks tendencies in modern agri-business as subversive of both moral principle and practical survival.

Butterfield, Herbert, The Origins of Modern Science (New York: Macmillan, 1958). Descriptive essays on major figures and concepts in the development of science from the Greeks to the present. Non-technical. Gives attention to cultural and psychological factors.

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Capra, Fritjof, The Tao of Physics (New York: Bantam, 1975). Compares the implicit worldviews of atomic physics and Eastern philosophy and mysticism. Finds important similarities.

Clarke, Arthur, 2001: A Space Odyssey. A journey from past to future through the eyes of an astronaut. Includes a computer-turned-enemy. Also a popular film.

Dickens, Charles, Hard Times. Novel of the effects of industrialism in England at the turn of the 19th century. Good examples of the effects of mechanistic method on human personality.

Heidegger, Martin, Basic Writings (New York: Harper, 1977). Includes the essay, "The Question Concerning Technology," which defines the essence of technology as neither machinery nor calculation but as a dangerous attitude of excessive mastery.

Heisenberg, Werner, Across the Frontiers (New York: Harper, 1974). A collection of essays by the renowned physicist, including pieces of Goethe, Einstein, technology, art, and religion. Non-technical.

Kidder, Tracy, The Soul of a New Machine (New York: Little-Brown, 1981). Novel about individuals working in the high-powered and accelerating world of computer engineering.

Kuhn, Thomas, The Structure of Scientific Revolutions (University of Chicago, 1962). Analysis of cultural and subjective elements in scientific research; develops the notion of the paradigm as the definitive feature of research and discovery. Technical.

Lewis, C.S., The Space Trilogy (Out of the Silent Planet, Perelandra, That Hideous Strength -- Macmillan paperbacks). Story of Ransom, who journies to Mars, Venus and back to earth, where the last battle between good and evil is cast in technological terms. Popular with students.

_____, The Abolition of Man (New York: Macmillan, 1943). Concise and carefully reasoned argument that the core of morality, despite cultural and historical variations, has remained unchanged and that scientific attempts to create new values are doomed, finally,

to abolish the humanity of man.

Macbeth, Norman, Darwin Retired: An Appeal to Reason (Gambit, 1971). Carefully reasoned criticism of Darwin's key assumptions; based on common sense and familiarity with issues in contemporary biology. Non-technical.

McLuhan, Marshall, The Gutenberg Galaxy (New York: Signet, 1962). Compendious illustrations of the nature of print technology (its rise, dominance, and waning in the face of electronic media).

Polanyi, Michael, Personal Knowledge (New York: Harper, 1964). A philosopher-scientist's exploration of the hidden personal components in "objective" scientific knowledge. Comprehensive; some parts technical.

Pirsig, Robert, Zen and the Art of Motorcycle Maintenance (New York: Bantam, 1974). A writer of scientific manuals and teacher of rhetoric attempts, at heavy personal cost, to step beyond mainstream rationality to discover the roots of our uneasiness with technology. Brings out the best in students in spite of some heavy going.

Roszak, Theodore, Unfinished Animal (New York: Harper, 1975). A literary-philosophical view of evolution, giving attention to perennial wisdom on change along with esoteric and counter-culture views (e.g. Blavatsky, R. Steiner, Gurdjieff). Entertaining; sobering.

_____, Where the Wasteland Ends (New York: Doubleday, 1974). An attack on the unconscious materialism implicit in the worldview of much contemporary science and technology. Calls on ancient wisdom traditions as a necessary corrective. Impassioned, literary; elegantly written.

Schumacher, E.F., Guide for the Perplexed (New York: Harper & Row, 1977). Clear and sensitive explanation of the uses of philosophical awareness in a technocratic world. Combines perennial and Christian principles. Author wrote Small is Beautiful.

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Shelley, Mary, Frankenstein. Good place for students to begin studying the rise of scientific attitudes. Still entertaining (along with its many cinematic spin-offs).

Skinner, B.F., Beyond Freedom and Dignity (New York: Bantam, 1971). Behaviorist argument that collective conditioning is the only reasonable solution to contemporary social, political and economic problems. Good example of possible human consequences of applied technology.

_____, Walden II. Skinner's fictional portrayal of a happy commune of psychologically conditioned children.

Teich, A., Technology and Man's Future (New York: St. Martin's, 1972). Anthology of essays under the headings, Advanced Technology, Philosophers of the Technological Age, Synthesis of Humanism and Technology, Technology Out of Control.

Thomas, Lewis, Lives of A Cell (New York: Bantam, 1975). A biologist's simply written account of the mysterious symmetries and patterns of biological life. Non- technical.

Thoreau, Henry D., Walden. Classic example of a personal synthesis of science, philosophy, literature, and applied technique. Challenging but rewarding prose-poetry.

Toffler, Alvin, The Third Wave (New York: Bantam, 1980). Good overview of possibilities of technology in a post-industrial, informational society.

Whitehead, A.N., Science and the Modern World (New York: Free Press, 1967). A philosopher's account of the rise of the scientific worldview. Good accounts of organiscism and mechanism.

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PEDAGOGICAL AIDS:

Elbow, Peter, Writing with Power (New York: Oxford, 1980). Numerous applications for cross-disciplinary writing, group composing, peer editing, freewriting, composing in stages, getting feedback, etc. Useful.

Moffett, James, "Writing, Inner Speech, and Meditation," College English 44 (1982), 231-246.

Judy, Stephen, Explorations in the Teaching of English, 2nd ed. (New York: Harper and Row, 1981).